

Response To Obviousness Rejection

Claims 16, 17, 19, 24-26, 28, 30-33, 37, 38, 41-43, 45, 50 and 70 remain rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Van Tol et al. (WO 97/42232) in view of Willson (WO 97/32208). Applicants traverse the rejections on the ground that a prima facie case of obviousness has not been established because not all of the claim limitations are taught or suggested by the combination. Claims 16, 19, 24-26, 28, 30-33, 37, 38, 41-43, 45, 50 and 70 are not obvious in light of Van Tol and Willson.

Applicants do not concede that the outstanding rejections are proper or render the claims obvious. However, Applicants have amended the claims in order to advance prosecution in this case. To the extent that the Examiner feels that Van Tol and Willson are still applicable to the claims as amended, Applicants submit the following in support of patentability.

Van Tol is directed to a process for the polymerization of alpha-olefins. The process includes contacting at least one alpha olefin with a catalyst and a co-catalyst under polymerization conditions. Van Tol describes a specific group of catalysts, and in the examples describes a polymerization of octene using $(C_5Me_4(CH_2)_2NBu_2TiCl_2)$ as a catalyst. *See Van Tol*, pages 26-28. Van Tol also describes a polymerization of octene and 1-octadecene using a different compound – $Et(Cp(iPr)_3)NMe_2TiCl_2$ as a catalyst, *Van Tol*, page 28-31, and a polymerization of 1-octene in the presence of ethylene using yet a third catalyst – $EtCp^*NMe_2TiCl_2$. *Van Tol*, page 31.

Willson is directed to a multicell holder for assembling and testing a plurality of catalysts as cells, spots or pellets, in a variety of reactions, including polymerizations.

Generally, the claims of the present invention are directed to methods for screening potential catalysts for polymerization performance for at least a second monomer, using a first monomer, and include concurrently reacting, in an array format of potential catalysts, at least a first olefin monomer (other than ethylene), evaluating the reaction, and performing a second reaction based upon the evaluation of the first reaction, the second reaction including the first and second monomers and a catalyst from the first reaction. More specifically, independent claim 16 includes determining the polymerization performance of at least 8 different potential catalysts reacted with the first monomer in the first reaction, identifying one or more catalysts from the at least 8 potential polymerization catalysts based on the polymerization

performance of the catalysts in the first reaction, and reacting the one or more identified catalysts with the first and second monomers under polymerization conditions in a second reaction; independent claim 42 includes determining a property of any polymer sample or polymerization mixture made during the first reaction at a rate of one hour or less per potential catalyst, identifying one or more catalysts from the potential polymerization catalysts based on the properties of the samples from the first reaction, and reacting the one or more identified catalysts with the first and second monomers under polymerization conditions in a second reaction; and independent claim 70 includes determining the polymerization performance of at least 8 different potential catalysts reacted with the first monomer in the first reaction, and polymerizing the first and second monomers as copolymers or higher-order polymers in a second reaction using one of the catalysts in the array based upon the polymerization performance of the catalyst.

Both the Van Tol and Willson references fail to teach identifying olefin polymerization catalysts for further testing as required in the claims, including, for example, claims 16 and 42, and conducting a further olefin polymerization reaction with those identified catalysts using different sets of monomers. The co-polymerizations of Van Tol (Examples II and III) involve distinctly different catalysts than the catalyst used to polymerize octene (Example I). Van Tol does not perform any additional polymerizations with other monomers using the same catalysts used to polymerize the first monomer based on the initial polymerization results, as is required in independent claims 16, 42 and 70.

In the Office action, the statement in Van Tol in Example III, “This example shows that the polymerization of higher olefins is also possible in the presence of a lower olefin, such as ethylene, under effective polymerization conditions using the catalyst system of the present invention.” *Van Tol*, pages 31-32, is relied upon to teach or suggest further olefin polymerization reactions as defined in the present invention. Applicants submit that this reliance is misplaced. That statement does not teach or suggest that the catalyst of Example III was either used in an earlier reaction to polymerize a first monomer or will be used in a later reaction using different monomers. That statement is merely a suggestion that maybe the catalyst family described in the reference could be used for similar co-polymerizations involving ethylene and higher olefins. This statement does not teach or suggests that the specific catalyst of Example III can be used in a second reaction involving 1-octene (a first

olefin other than ethylene) and a second monomer (not ethylene, since the reaction in Example III includes ethylene and the present claims require that the second monomer not be involved in the first reaction). Instead, Van Tol is pontificating generalities based upon a single polymerization for a family of catalysts for that polymerization.

In contrast, the claims of the present invention are directed to screening methods which include reacting specific potential catalysts in a first polymerization with a first monomer and not a second monomer, evaluating the reactions, and reacting one or more of the potential catalysts with the first and second monomer in a second reaction based upon the evaluation of the first reaction. Thus, the statement of Van Tol can in no way be extrapolated to teach or suggest the methods of the presently pending claims.

With regards to the Office action assertion that Van Tol uses a first alpha olefin other than ethylene as a reference for evaluating further polymerizations based upon that order of the examples, Applicants respectfully disagree. There is no basis, either in law or in fact, for the conclusion that either the order of the examples suggests timing, or that the order of examples indicates a series of progressive screens. Van Tol simply attempted three different polymerizations with three different catalysts.

The Office action appears to be relying on Applicants' specification to improperly extrapolate the teachings of Van Tol, specifically asserting that the order of the examples teaches successive screening of catalysts, without proper motivation for such extrapolation.

In view of the repeated warnings by the Federal Circuit against hindsight reconstruction (*i.e.*, against finding the required motivation in the guidance of the instant specification), Applicants respectfully submit that such extrapolation is improper under the law. *See, for example, Grain Processing Corp. v. American Maize-Products Co.*, 5 USPQ2d 1788 (Fed. Cir. 1988) (stating that obviousness cannot be established by merely showing that each element of the patented products may be found somewhere in the prior art). *See also In re Vaeck*, 20 USPQ2d 1438 (Fed. Cir. 1991), and *In re Dembiczak*, 50 USPQ2d, 1614 (Fed. Cir. 1999). *See also In re Kotzab*, 54 USPQ2d 1308 (Fed. Cir. 2000) (holding that an invention was not obvious, even though based on technologically simple concepts from a combination of known elements, since there was an absence of a specifically-identified understanding within the knowledge of a skilled artisan that would have motivated one to make the particular claimed invention).

Applicants also feel that additional assertions made in the Office action do not cure the deficiencies of the references.^{1 2}

For at least these reasons, all of the pending claims are patentable over Van Tol in view of Willson.

Therefore, Applicants assert that a prima facie case of obviousness does not exist for the pending claims in view of the references relied upon in the Office action.

Applicants request reconsideration of this application.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

The Examiner is hereby authorized to charge the fees required in connection with this Amendment F to Deposit Account No. 50-0496, in accordance with the Transmittal submitted herewith. The Examiner is also authorized to debit any other fees required in connection with this application, or to credit any overpayment of fees in connection with this application to Deposit Account No. 50-0496.

Respectfully submitted,

Date: 10/28/04

Symyx Technologies, Inc.
3100 Central Expressway
Santa Clara, California 95051
Tel.: (408) 720-2598 Fax: (408) 773-4029


James H. Ackley, Reg. No. 45,695
Attorney for Applicant(s)

¹ For example, the Office action relies upon the statement in the Abstract of Van Tol, which states "The present process for the polymerization of polymers of alpha-olefins involve contacting, under polymerization conditions, at least one α -olefin. . . with a catalyst. . ." The Office action asserts that this indicates that this statement represents a library. Even if, arguendo, this were considered to represent a library of polymerization catalysts, the Van Tol reference along with Willson fail to disclose or teach screening catalyst arrays in the manner recited in independent claims 16, 42 and 70.

² Furthermore, with regards to the assertion in the Office action that Van Tol is not limited to its examples and as a whole and can be extrapolatable to performing various examples in parallel, Applicants agree that the reference is not limited to its examples, but submit that this does not change the fact that Van Tol does not disclose or teach a second reaction step utilizing selected potential catalysts from the first reaction and a second monomer based upon the properties of the polymerized samples.